



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/518,193

08/22/2005

Caiguo Gong

2002B093

5600

23455 7590 04/17/2009
EXXONMOBIL CHEMICAL COMPANY
5200 BAYWAY DRIVE
P.O. BOX 2149
BAYTOWN, TX 77522-2149

EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

04/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,193	Applicant(s) GONG ET AL.	
	Examiner Katarzyna Wyrozewski	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,8,10,11,13,16,19,20,22,23,27,29,30,32,34,35,39,42,45 and 72-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/10/09</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1,2,5,8,10,11,13,16,19,20,22,23,27,29,30,32,34,35,39,42,45 and 72-76.

In view of Applicant's request for Continued Prosecution, amendment and a response dated 2/10/2009 following office action is rendered non-final. In view of newly added limitations to independent claims, new search and new art are hereby applied. The prior art currently of record does not teach limitation of the viscosity average molecular weight.

New Matter rejections under 112 1st paragraph are hereby withdrawn.

Double Patenting rejection over 11/293,561 is maintained. The co-pending application discloses clay nanocomposite wherein rubber is modified with polar group. Claim 11 further teaches that polar group includes anhydrides. Applicants attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to page 20 of the co-pending application, which page specifically defines the same monomeric compound as that of the instant invention. Applicant's attention is further drawn to the description of the rubber (specifically XP-50) that would read on applicant's limitation of

Art Unit: 1796

viscosity molecular weight and styrene content. XP 50 is a butyl rubber also described in the instant invention.

In view of the above discussion, it is examiner's position that the co-pending application discloses subject matter overlapping with that of the instant invention. The Double Patenting rejection is hereby maintained.

Claim Objections

1. Claim 30 is objected to because of the following informalities: Claim 22 discloses elastomer comprising styrenic units some of which are functionalized. At the same time claim 30 required that some of the styrenic units be substituted. Claim 30 is not narrowing down the limitations of claim 22 unless substitution and functionalization mean two different things, i.e., if substitution is other than compound of claim 22. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 1796

2. Claims 1, 2, 5, 8, 10, 11, 13, 16, 19, 20, 22, 23, 27, 29, 30, 32, 34, 35, 39, 42, 45, 72-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over ELSPASS (US 5,807,629) in view of WANG (US 5,621,044).

The prior art of ELSPASS discloses composition comprising butyl rubber, which is modified with polar group. Rubber article of ELSPASS is utilized in areas of tire requiring low permeability to air such as inner liners.

The rubbers of ELSPASS include isoprene/styrene copolymers (col. 2). Polar group includes anhydrides such as maleic anhydride and succinic anhydride. Rubbers of ELSPASS are trademarks of Exxon.

Clays of ELSPASS are ammonium modified clays (col. 2) also known as organoclays. Formula for ammonium compound utilized to modify the clay is also shown in col. 2. Clays are those capable of intercalation and exfoliation and include smectite type clays (col. 2). Examples are montmorillonite, hectorite, vermiculite, saponite, hallocite and the like. In the teachings of ELSPASS the amount of clay in the nanocomposite is in a range of 1-25 wt % (col. 3).

Examples of ELSPASS teach use of various additives known in tire industry including curatives and reinforcing fillers such as carbon black.

According to process of ELSPASS elastomer is modified either by dissolving in cyclohexane or other suitable solvents (examples) before it is incorporated into composition with clay

The difference between the present invention and the disclosure of ELSPASS is specific limitation of styrene content and viscosity average molecular weight of the styrenic rubber, as well as details of rubber modification.

Art Unit: 1796

With respect to the above difference the prior art of WANG discloses another rubber composition that is compatible with clay and utilized due to presence of unsaturated bond and therefore increasing crosslinking effect.

The rubber of WANG as disclosed in col. 18 is XP-50, and isoprene-paramethyl styrene having styrene content of 5%. Since it is a tradename of the instant invention as well, it will meet the limitation of viscosity average molecular weight. Col. 7 of the specification further enables 0.5 to 20 pbw of styrenic monomer. Viscosity average molecular weight is also defined.

WANG teaches that rubber can be modified using peroxide. Peroxides are utilized in amount of 1-10% and include dialkylperoxide, ketal peroxides, peroxyesters and the like (col. 9).

Suitable grafting monomers overlap with those disclosed by ELSPASS and include polar compounds such as those based on acrylic acid and maleates including monoalkylmaleate, maleimides and the like. At most the functionalization degree was 2 % (see various examples).

In clay nanocomposites, rubbers or elastomers are modified in order to be more compatible with clay filler as well as with the polymeric or elastomeric matrix.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize isobutyl-styrene based rubber in the invention of ELSPASS and thereby obtain the claimed invention for following reasons:

- a) ELSPASS suggests use of such rubbers with organoclay,
- b) functionalization of such rubber would still produce intercalated and eventually exfoliated clay since the same functionality would have the same effect in both cases.
- c) One of ordinary skill in the art would still be able to produce tire inner liners of ELSPASS if such modification was made.

Applicant's arguments are considered moot since new prior art is applied. Claim 30

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski whose telephone number is (571) 272-1127. The examiner can normally be reached on Mon-Thurs 8:30 AM-2:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katarzyna Wyrozebski/
Primary Examiner, Art Unit 1796
April `4, 2009